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The Maryland Fruit Grower

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Edited by the Secretary, A. F. Vierheller, Extension Horticulturist

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HANDLE APPLES CAREFULLY

This fruit bruising question was somewhat like Mark Twain's remarks about the weather, "Everybody talks about it, but nobody does anything about it". Well H. P. Gaston of Michigan Experiment Station did something about it. He found that 15% of the crop in 1927 went on the cull pile, due to bruising, while worms caused a loss of only 11.8% in comparison. Then Hugh Prettyman, Inwood, W. Va., began some investigations and found that pickers bruised from 29% to 58% of the apples, depending upon the variety, with 79% of fruit bruised in varying degree, while going through the grader. The fruit was 57% damaged when ready for loading in the cars.

In 1938, A. F. Vierheller, Extension Horticulturist, University of Maryland, decided to make some attempt to bring to the attention of the growers and their packing house crews, the seriousness of fruit bruising. Cardboard signs were placed in packing houses, and for each of three years, new signs were made up. This was felt to be a feeble attempt, but in a short time, requests for these signs came from all parts of the country. The signs were furnished by University of Maryland Extension Service. The supply is now exhausted but requests are still coming in. It is hoped that some signs can be made up for this harvest season. It was felt that the fruit-bruising matter was probably forgotten, but it is a serious thing, as shown by the fact that August, 1941, Blue Anchor, published by California Fruit Exchange devoted a page to the Maryland signs, and also the August 23, 1941, Rural New Yorker contains a full page write-up on the evils of rough handling of fruit written by A. F. Vierheller at the request of the editors of the Rural New Yorker.

We are getting that crop in, now, ready for the market, and that's where we make or lose money. Reports are that the early or soft varieties, Jonathan, Grimes, etc., are going to be heavy, and if so, the better fruit is going to sell. Let's do all we can to reduce bruising. We can't expect 100% results, but certainly we can't continue losing more fruit by careless handling than we feed to our codling moths. Look over the graders, and pad them. Don't crowd the bins, or overload the grader. Slope bins gently so fruit won't roll down so fast, or else lay some feed-bags or canvas over the upper part of the bin, to slow down the rolling apples. Try to adjust the grader so that there are no long drops for the fruit, or pad these places to avoid bruises. Place canvas aprons at the bin outlets, and use these aprons when lowering fruit into the containers. Caution the man who dumps fruit onto the grader. Load and unload the field crates as carefully as possible. Keep crates in repair. Insist that the pickers be careful. There will be a lot of "green" pickers, this year, and it may be easier to break them in right, than to change their habits, later. Harvesting time is a rush season, and it may not be possible to make every one of the above precautions click as we would like, but it's our crop, and we should insist that it be handled as carefully as our conditions will permit.

APPLE BOX STANDARDS

A communication from Freight Container Bureau, Perishable Division, Association of American Railroads stated that 11 different sizes of wooden and wire-bound apple boxes and 13 different sizes of fibre board boxes have been in use, and the Bureau Tariffs contain 41 different specifications for apples containers.

In 1940, several regional growers' meetings were held to simplify the apple box sizes and the recommendations adopted at these meetings were submitted to the Freight Container Bureau. In these recommendations, there were 5 different sizes of apple boxes, and 13 different specifications covering the types of construction in these 5 sizes. Included in this list are 3 sizes of fibreboard boxes which were recently approved. Also included are the various fibreboard apple containers, most of which are for cell packs now authorized in the Tariff and which remain unchanged.

The types of wooden boxes are: $1\frac{1}{8}$ bushel—11 x 13 x 17 inches with 2431 cubic inches capacity using solid, panel or cleated end; $1\frac{1}{8}$ bushel—11 x 13, $\frac{5}{8}$ x 16 inches with 2425 cubic inches capacity using solid, panel or cleated end; Berks-Lehigh Box—11 x 12 $\frac{1}{2}$ x 15 inches with 2156 cubic inches capacity using solid or panel end; Northwest Box—10 x 11 $\frac{1}{2}$ x 18 inches with 2174 cubic inches capacity using solid or panel end; Michigan Box—11 x 12 $\frac{1}{2}$ x 16 inches with 2200 cubic inches, using solid end only. The cancellations will not apply until July 5, 1942, to allow growers or shippers a chance to use up their present supplies of off-size boxes. Growers interested in sizes of fibre-board boxes now approved may write Freight Container Bureau, Perishable Division, 30 Vesey Street, New York, N. Y.

APPLE ADVERTISING

Not long ago the radio at home was "left running", and during the evening, a program came on, sponsored by the Bell Telephone Company. Here is a big concern, selling a service that we could not do without. Yet here was money being spent in advertising. Maybe it was a gesture of good-will by the Company, but at any rate, Bell Telephone was being brought to us by radio. In the rush of defense production there are possibly some concerns that have almost stopped manufacturing their regular supply of goods, yet they are still advertising. Automobile production will be cut sharply, yet it is doubtful if the advertising budget will be cut very much, if any. Advertising is simply the process of keeping the name of a product before the buying public. If we grow apples we should try to tell people about them so they'll buy them. In the Cumberland-Shenandoah section, we have a set-up for just such a job. The Appalachian Apple Service is now in its fifth year. It is grower-controlled. It has done some fine work, and is well established among the regional advertising groups now operating in several sections of the country. It's contacts with commission men, chain and independent stores, newspapers, nutrition specialists, National Apple Institute and other agencies allow plenty of outlets for advertising material for apple uses. We have a goodly number of subscribers in Maryland. To become a subscriber a grower simply has to write Appalachian Apple Service, Martinsburg, W. Va., and ask for a subscription blank. Then estimate the apple crop, in the orchard, and agree to pay 1c per bushel on all apples sold which grade U. S. Utility and above. For more complete information, write

to either Appalachian Apple Service, or A. F. Vierheller College Park, Md. In addition to the many remarks by various men in the apple trade that we have printed concerning advertising, we print one now, from an article in July-August, 1941 "Nation's Agriculture" by M. P. Rasmussen, who states:

"If any grower could stand behind the retail counter for a week or so he would learn many things. The number of different commodities which a retailer regularly stocks will depend largely on type of store and average income of customers. Our study indicated that in low income areas, independent grocers carried about 336 items, while in high income areas, the same type of store carried about 918 items. Do you think that the average retailer or average clerk is going to inform himself fully on every item unless he gets some help? I believe that if we are to get them to push fruits and vegetables, some interested group must help them out with display materials and sales programs. Think of the help that is given to retailers by manufacturers of such products, as jello, margarine, cake flour, shortenings and a dozen other products, and then remember that in a sense every such product is competitive for the consumer's dollar with almost every other product sold in store.

That will give you an idea of what producers of fruits and vegetables are up against. Naturally, individual growers cannot do this job, therefore, it can be done only through organized effort. Growers and everybody in the produce trade must face this condition courageously and find some program of action if they are to correct present conditions."

Fall Fertilizer? Read the Ads.

FACTORS INFLUENCING APPLE HARVEST

New Jersey Horticultural News has some interesting observations regarding apple harvest which should interest every apple grower. The article follows:

"Determination of the best time for picking apples is a problem which has been studied by growers and investigators for many years. Various phases of the problem include development of edible quality which, of course, is closely associated with a stage of maturity, the development of color, increase in size, and increase in rate of drop.

The recent experiments with hormone sprays just before harvest for holding fruits on the tree, have caused apple growers to re-examine this problem of time of picking. These sprays, if properly applied, will undoubtedly prevent dropping to a certain extent. This will permit the grower to leave the crop on the trees a little longer in order to get better color and size. The length of time which the fruit can be profitably held on the trees will depend on whether additional color is desired, on the rate of increase in size, the amount of dropping in spite of the sprays, and the relative maturity of the fruit. With the earlier varieties particularly, it should be kept in mind that the fruit may be held on the trees until it is so over-mature that it will not keep or ship well.

Pomology students at Rutgers University are encouraged to form some conclusions of their own on time of picking based on observations and measurements made at regular intervals during the ripening period. In the fall of 1940, for instance, four senior pomology students tagged 30 apples each and measured them at weekly intervals. One set of measurements made by Mr. R. F. Gladwin of Brookside, N. J., may be considered as fairly

typical of the data secured by the students. Gladwin tagged and measured 15 apples on the inside of a 24 year old Stayman tree on the Horticultural Farm at New Brunswick and 15 apples around the outside of the same tree. These fruits were measured with a steel caliper and the results recorded in 1/100ths of an inch. The average diameter was computed and is shown in the table. The average volume of apples was then computed as if the fruit were spherical in shape. Stayman apples are not spherical, of course, but this permitted a fairly close estimate of the actual volume of the fruit.

The per cent increase in volume for each measuring period was then computed which showed that the greatest increase occurred during September and that the rate decreased during October. Most of these particular fruits should have been picked between the 10th and 16th of October, judging from the development of color and the softening of the flesh as measured by pressure tests with a seven-sixteenths inch plunger.

In the next to the last column, based on a theoretical crop of 10 bushels on August 22, (this tree actually yielded slightly over 20 bushels), the number of bushels which could be picked on any one day is shown. This is, of course, the amount that would be available if there were no drops.

Measurement of Stayman Apples at New Brunswick

Date	Average Diameter In Inches	Average Volume In Cubic Inches	Per Cent Increase In Volume	Total Crop in Bushels	Pressure Test In Pounds
Aug. 22	2.58	8.99	---	10.0	---
29	2.63	9.53	6.01	10.6	---
Sept. 4	2.70	10.30	8.08	11.5	---
11	2.78	11.25	9.22	12.5	---
18	2.84	11.99	6.58	13.3	---
26	2.91	12.90	7.67	14.4	---
Oct. 3	2.94	13.31	3.18	14.8	22.0
10	2.98	13.86	4.13	15.4	17.0
16	3.02	14.42	4.04	16.0	16.4
23	3.03	14.57	1.04	16.2	14.0

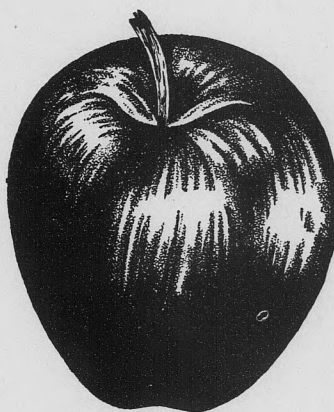
From these measurements it would seem that the principal reason for keeping the fruit on the tree during the last four-week period was to secure better color and possibly better edible quality. The total crop would increase 1.4 bushels during that period if there were no drops at all. The drops were not accurately recorded for this particular tree but they probably amount to more than 1.4 bushels. Some years the dropping might be much heavier and of course, there is always the danger of a windstorm taking off a sizeable portion of the crop. If the trees were sprayed with a hormone spray the rate of dropping would be reduced, but there would still be some.

The rate of increase in size of fruit would, of course, vary with the variety and with growing conditions. A number of investigators, however, have found that the rate of growth tends to slow down as the fruit reaches maturity. This has been true for Stayman apples measured at New Brunswick in previous years. It would seem, therefore, that the hope of a considerable increase in crop of Stayman apples in New Jersey due to increase in size during the last three or four weeks would not be justified. Since these figures are taken from a small number of fruits in one year, they should not be considered as entirely indicative of what would occur during other years. They do, however, indicate a general trend."

Here's How

FRUITONE

Reg. U. S. Pat. Off.



The pre-harvest drop spray

MAKES MONEY FOR YOU!

1. It reduces picking cost—fewer Apples are knocked off by pickers.
2. Reduces loss from wind falls—the Apples hang on the trees tighter.
3. Because Apples stay on the trees until maturity, they have better size and color—they bring better prices.
4. Helps to solve your labor problem—by spreading out your picking schedule, smaller crews can do the work.
5. Reduces possible loss from storage scald—tree ripened fruit better resists scald.
6. Fewer drops mean more profit per tree.
7. FRUITONE is tested and proved under field usage.



Reg. U. S. Pat. Off.

Distributed by

CALIFORNIA SPRAY-CHEMICAL CORPORATION

"The ORTHO Company"

Elizabeth, N. J.

APPLES AND POMACE AS CATTLE FEED

Those cull apples are a valuable cattle feed. Vermont tests showed apples to be worth about 40% as much, per ton, as corn silage. Washington tests showed that 1.5 lbs. of apples per head, fed daily to fattening lambs, along with alfalfa and corn grain, were as good as the same weight of corn silage. In Utah tests, 9 to 15 lbs. of apples equaled the value of 1 lb. of grain when fed to pigs, along with a grain ration.

Pomace from the cider press runs 21% dry matter compared with 28% dry matter in well-matured corn. There is $\frac{1}{3}$ as much digestible protein in pomace as in corn silage. In short, pomace is a good substitute for corn silage for dairy cows, being of about the same value as a ton of corn silage. Feed it after milking. Some Maryland farmers ensile apples along with the fodder as the silo is filled. Some dairymen feed whole or chopped apples daily, using about a peck a day, per animal. Some dairymen find that apples increase milk flow. Here is a talking point for sale of culls to dairymen. Let's develop this outlet. The dairy specialists in your Extension Service or Experiment Station can tell you more about this. Feed prices are up, and dairymen should be interested in a good substitute feed.

Prevent Apple Drop? Read the Ads.

THE FRUIT SHOW

The Fruit Show will be held at the Lord Baltimore Hotel, Baltimore, in January. The classes will be: Plates—5 apples; Diamonds—16 apples; Flats—16 apples; Fancy Baskets—12 to 15 apples. Varieties to be considered are: York, Stayman, Grimes, Winesap, Golden Delicious, Jonathan and Paragon or Black Twig. All red bud sports will be considered as one class; and all varieties not listed above, will be judged as one class. More definite information will be issued next month. In the meantime, begin selecting your show stuff.

Peach Borer Control? Read the Ads.

FACTORS AFFECTING COLOR AND SIZE OF FRUIT

In July, 1941, Illinois Horticulture, published by Illinois Horticultural Society, we find the following extract from Missouri Bulletin No. 428, as reported by Dr. A. E. Murneek:

"Some years ago the Missouri Agricultural Experiment Station made a survey in representative counties in the southwestern and northwestern fruit growing sections of the state of the major causes responsible for defects of that portion of apples being designated in grading as culls. The number of fruits examined during the two year period was close to 100,000. . . . Lack of size and poor color were by far the two outstanding factors which caused apples to be thrown out as culls. In fact, it accounted for over one-third of all the defective fruit. While this was so in 1928 and 1929, which were years of ample rain fall and good weather for growth, it is quite certain that because of recurring drought and other disturbances during the past few years, the same two causes have been at least just as, but most likely more, important since that time. An improvement in size and color in conjunction with better control of diseases and insect pests should go a long way in reduction of culls.

RING FERTILIZATION



... MAKES RICH FATHERS BUT POOR SONS

Ring fertilization—with a starved cover crop or none at all outside the fertilized ring—means rapid impoverishment of the humus supply; increased liability to erosion; and premature failure of the orchard.

Orchards regularly fertilized with GRANULAR 'AERO' CYANAMID—the lime-nitrogen fertilizer—broadcast at the rate of 400 pounds per acre, receive nitrogen enough for the trees and cover crop; and lime enough to neutralize the soil acidity resulting from sulfur sprays, dusts, and acid-residue fertilizers.

Write for Leaflet F-181



AMERICAN CYANAMID COMPANY
30 ROCKEFELLER PLAZA NEW YORK, N. Y.

Nothing much can be done without the more or less direct effects of weather, causing a certain amount of injury to fruit, such as results from frost, hail, limb rub or sunscald. Though varying from year to year, and place to place, on the whole, these factors account for a good proportion of the defective specimens, in our survey for about 15% of cull apples. It would seem that in fruit growing, as in the raising of a good many other crops, one has to take a chance with the weather.

A great deal of "mechanical injury" to fruit may be largely eliminated by exercising greater care in harvesting and packing of the fruit. The use of the right kind of containers, and more experienced and careful harvesting crews, should help to reduce this unnecessary loss to growers. The majority of apples thrown out of commercial grades because of mechanical injury were of No. 1 quality in all other respects. Some very fine fruits often are half ruined during the picking and packing operations."

Vigor of Tree and Size of Fruit

Only vigorous trees can yield good crops of large fruit regularly. The tree, more specifically the leaves, may be considered the equipment or machinery that produces the raw materials that go into the making of the fruit. If this equipment is reduced or devitalized, then crop production will be curtailed.

Young vigorous trees usually produce fruit that is relatively large in size, while older, weakened trees form medium to small-sized fruit. The foliage of a tree varies directly with the vigor or the amount of growth the tree is making. With most apple varieties a terminal shoot growth of 6-12 inches is desirable. Good growth and annual production of quality fruit are associated.

If the crop is more than an average one for particular trees, as is often the case in Missouri in a year of good bloom, then the fruit may not reach a normal or desirable size. Certain orchard practices may then be put into operation, as will be discussed further on, that will help to make the fruit larger. Whether it is desirable or profitable to do this has to be left to the judgment of the grower.

Rich and deep soil, above all, is the most important requirement for the production of vigorous fruit trees. If it is not available, then, vigor may be maintained only by especially good soil management, particularly ample soil fertilization. The natural soil deficiencies have to be corrected by the grower. This is often done successfully, but always at considerable expense.

No fertilizer has been found to be as effective in maintenance of desirable growth and yield of fruit trees as one containing nitrogen in readily available form. Though many fruit growers believe that nitrogenous fertilizers are of benefit only for increasing the fruit set, they likewise stimulate vegetative development and increase the size of fruit. When twig growth is meager (less than 6 inches in the case of most apple varieties) then the foliage is sparse and of a pale green color, then application of nitrogen will lead to increased twig extension and the development of more and large leaves with a healthy green color. Within certain limits, a luxuriant foliage is conducive to the proper growth of fruit.

It should be understood, however, that a too liberal use of nitrogenous fertilizer will have a tendency to delay the ripening of the fruit, which in extreme cases may be 2 to 3 weeks. This may or may not be desirable from a marketing point of view. And because of the increased foliage as a

Hold the Fruit on Longer For Better Size and Color... Greater Dollar Return



with **STAFast** **HORMONE SPRAY POWDER** *and It Helps Solve the Picking Problem, Too!*

STAFast controls pre-harvest drop and windfall losses of apples and pears . . . and brings growers these extra benefits.

- Holds the crop on the trees until it reaches the stage of maturity you think best.
- Enables your fruit to get more days of bright sunshine, more cool nights and more rain to deepen color and increase size.
- Makes possible a substantially greater *dollar return* on the crop.
- The STAFast way is economical, and it brings an added crop value well beyond the cost of the hormone spray applications.
- In the STAFast-sprayed orchard the harvest period is longer which means that the picking schedule is spread out. Smaller crews can do the work, thus helping to solve the labor problem. Furthermore, spot picking is eliminated; ladder losses are cut.
- STAFast is a powder; simply sifted into the tank in the same manner as other spray materials growers are accustomed to using. It contains a wetting agent and adhesive to give better wetting, sticking and all-round efficiency.
- Proved in commercial fruit growing regions from coast to coast.

AN ORCHARD† BRAND PRODUCT FROM TEST TUBE TO CONSUMER'S PACKAGE



GENERAL CHEMICAL COMPANY
40 RECTOR STREET, NEW YORK, N. Y.

Sales Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo
Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston
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Pacific Coast Sales Offices: San Francisco • Los Angeles

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In Canada: The Nichols Chemical Co., Ltd. • Montreal • Toronto • Vancouver

* Trade Mark of General Chemical Co.

† Reg. U. S. Pat. Off.

result of fertilization, there may be more shading of the fruit and consequently less development of red color. It is evident, therefore, that while nitrogen is of great benefit for production of a fruit crop, it has to be used with judgment.

Leaves in Relation to Fruit Development

Leaves are the organs in which almost all the materials that make up the fruit, excepting water, are formed in the presence of light. Other things being normal, the larger the leaf area the more food materials will be received by the fruit, although a certain proportion may come from reserves in the tree. A fruit like an apple or peach, contains, when fully developed, about 10-14% of sugar and other so-called carbohydrates, some nitrogen, and, in small amounts, a number of ingredients, that, like nitrogen come from the soil.

The volume or weight of fruit that can be produced per tree depends chiefly on the amount of foliage that is available for the developing fruit crop. It has been demonstrated repeatedly that a certain number of large leaves is required for the formation of an apple or peach of full size, color and quality. In order to obtain apples of commercially desirable size 30-40 leaves are needed per fruit, depending on the variety. When a tree is carrying a heavy crop, this number is often much lower, and as a result the fruit is not able to reach full development. Counts made on heavily bearing King David and Jonathan trees at Columbia, Missouri, showed less than 20 leaves per fruit. These apples were conspicuously small when harvested.

The fruit has the first call on the food resources of the tree, especially the carbohydrates formed in the leaves. If the leaf area exceeds the requirements of the fruit crop, then the surplus of food substances will go to the vegetative parts of the tree. The increase in circumference of the trunk, limbs and spurs will be greater, and more flower buds will be formed for the next year. The reverse will be true when there is a reduced foliage in proportion to the amount of fruit that the tree carries or when the leaves are severely injured or destroyed early in the season by insects or diseases.

"The number of leaves that a tree may produce varies almost directly with the amount of shoot growth. If the tree is vigorous it will grow more and will have an ample foliage. The maintenance of good growth conditions, 10 or more inches of annual twig extension, by proper soil management or fertilization or pruning, will assure a good leaf area for the production of a satisfactory crop. By the time all the drops have occurred and the final set has been established, the leaf area for the season has also been produced. The size of the fruit now can be increased only by adjusting (through fruit-thinning) the number to the existing quantity of leaves present."

An unbruised pack may bring more Jack
But BANG! CRASH! and you'll lose some cash.

The A B C of handling fruit:
Always Be Careful.

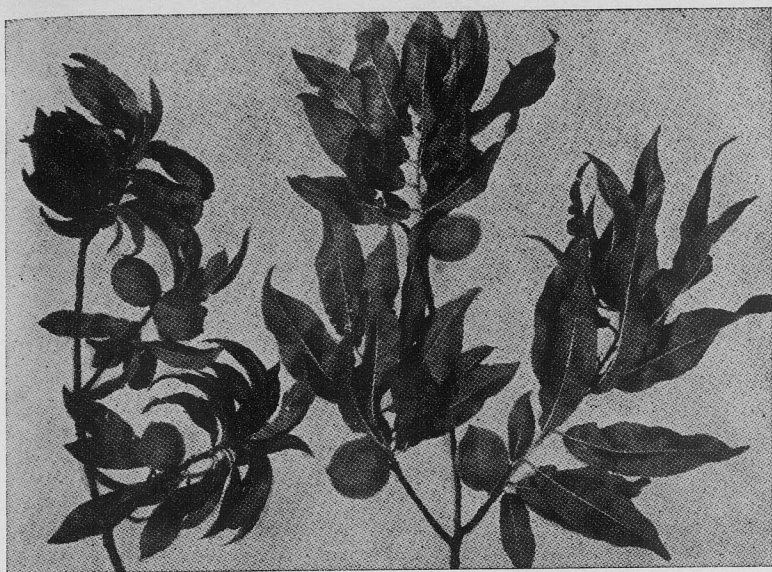
Have You Read the Advertisements?

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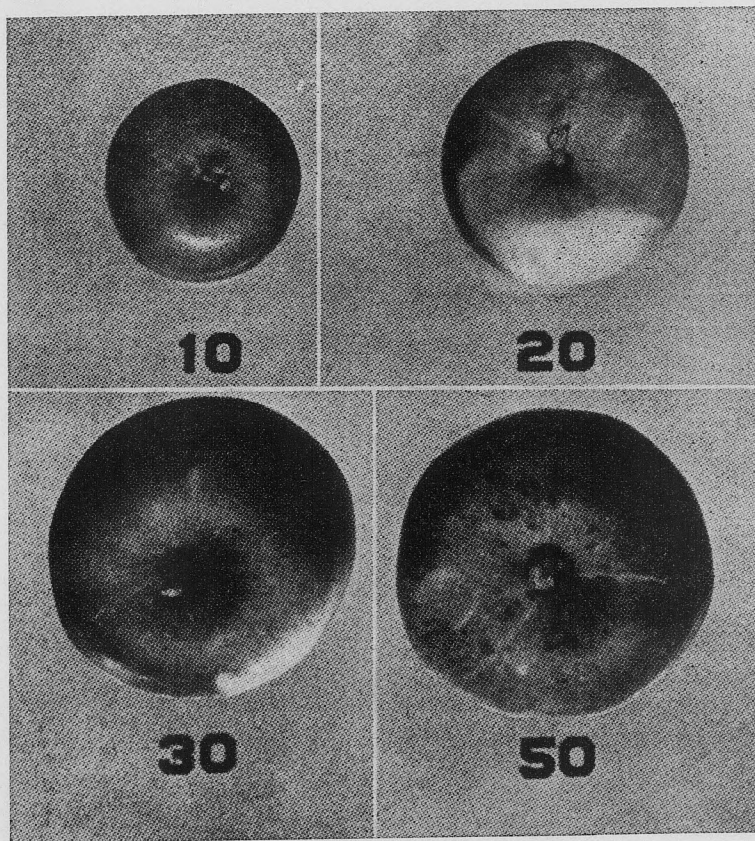
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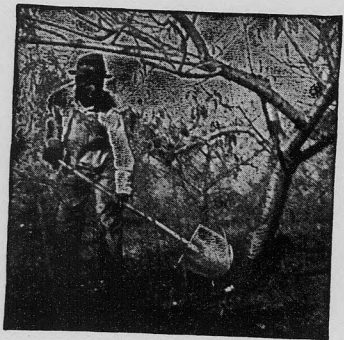
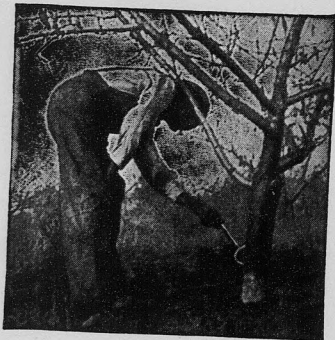


Vigorous trees with good foliage produce large fruit. Right-Elberta peach with ample nitrogen fertilizer. Left-Elberta unfertilized.



Relation of leaf number (10, 20, 30, and 50) to size of apples. About 30 to 40 or more leaves are required for development of large fruits and for tree support.—(Illustrations by courtesy Illinois Horticultural Society)

Controlling
PEACH BORER
with
PARA-SCALECIDE



Para-Scalecide has been used for 10 years on millions of peach trees, both young and old, without a single report of injury.

Para-Scalecide is regular Scalecide containing paradichlobenzene. The paradichlorbenzene is in liquid form and is applied directly to the trees at the right strength to kill borers without injury to the tree. It is diluted 1 to 7 with water and applied to the base of the trees with long handled dippers. The earth is then mounded.

The Georgia State Board of Entomology in 1940 after testing Para-Scalecide states,—“all borers found were dead and mostly decomposed, and there was no bark, cambium or other injury to the trees.”

Trees of all ages are treated. It is cheaper than ethylene dichloride and much less complicated. Use this method for YOUR peach trees. Make the application after the crop is picked and before the rush of Fall work begins, although any time before the ground temperature is colder than 60 degrees is satisfactory.

Write for leaflet “Controlling Peach Borer” with full information and prices.

B. G. PRATT COMPANY

Manufacturers of Scalecide, Spra-Cream, Straitar, D-X, etc.

50 Church Street

New York, N. Y.